



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,992	02/18/2004	Katsutoshi Suzuki	9281-4768	3310

7590 12/11/2006

Brinks Hofer Gilson & Lione  
P.O. Box 10395  
Chicago, IL 60610

EXAMINER

LUKS, JEREMY AUSTIN

ART UNIT	PAPER NUMBER
----------	--------------

2837

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EF

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/780,992		SUZUKI, KATSUTOSHI	
	<b>Examiner</b>		<b>Art Unit</b>	
	Jeremy Luks		2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claim 1 recites the limitation "the two sides perpendicular..." in lines 9-10. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (WO 01/41496) in view of Azima (6,522,760) and Shimakawa (5,894,263). Sakai teaches a plane diaphragm (Figure 1B, #9) and a vibration-generating driving source (2, 3) for vibrating the diaphragm (9); at least one end and two sides (ends of diaphragm #9) perpendicular to the one end and opposite to each other are supported on an elastic cushion member (6b), the cushion member (6b) is supported on a base (12), with one side of the base (12) supporting the diaphragm (9) and the other side of the base (12) arranged at a side opposite to the diaphragm (9), and wherein the diaphragm (9) vibrates in a plane direction perpendicular to the plane of the diaphragm (9) when the vibration-generating driving source (2, 3) is driven; wherein the vibration-generating source includes a magnet (Figure 3B, #2) arranged with a predetermined

Art Unit: 2837

gap between the magnet (2) and the back side of the diaphragm (9), and a coil (10) wound with a predetermined gap between the coil (10) and the outer peripheral surface of the magnet (2), the coil being fixed to the back side of the diaphragm (9), the magnet (2) being mounted on a first plate-shaped yoke (1), and wherein the first yoke (1) is supported on a connecting member (5) fixed to the back side of the diaphragm (9) and a gap is formed between the first yoke (1) and the base (12). Sakai fails to teach wherein the vibration-generating driving source is supported on the back side of the diaphragm near one end of the diaphragm; a vibration controlling portion for controlling a particular vibration mode having a large amplitude generated in the diaphragm is formed in the cushion member or the base; wherein the vibration controlling portion is formed by partly varying the width dimension of the cushion member by partly projecting or concaving the portion of the cushion member, and the elastic force of the cushion member supporting the diaphragm is partly varied by the vibration controlling portion. Shimakawa teaches a vibration controlling portion (Figure 7, #21) for controlling a particular vibration mode having a large amplitude generated in the diaphragm is formed in the cushion member (Col. 8, Lines 55-63), wherein the vibration-controlling portion (21) is formed by partly varying the width dimension of the cushion member (Figure 12, #21e-f) by partly projecting a portion (21e) of the cushion member (21e-f), and an elastic force of the cushion member (21e-f) is partly varied by the vibration-controlling portion. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Sakai, with the apparatus of Shimakawa to provide a flat spectrum of frequency vibrations. Shimakawa fails to teach

Art Unit: 2837

wherein the vibration-generating driving source is supported on the backside of the diaphragm near one end of the diaphragm. Azima teaches wherein a vibration-generating driving source (Figure 3, #34) is supported on the backside of a diaphragm (11) near one end of the diaphragm (11). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Sakai as modified, with the apparatus of Azima to provide acoustically acceptable effective distribution and excitement of resonant mode vibration, resulting in improved sound quality.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (WO 01/41496) in view of Azima (6,522,760) and Shimakawa (5,894,263), as applied to Claim 1, and further in view of Sahyoun (6,460,651). Sakai, Azima and Shimakawa are relied upon for the reasons and disclosures set forth above. Sakai, Azima and Shimakawa fail to teach holes formed in a portion of the cushion member, and the elastic force of the cushion member supporting the diaphragm is partly varied by the holes. Sahyoun teaches holes (Figure 33, #276) formed in a portion of a cushion member, and the elastic force of the cushion member supporting the diaphragm is partly varied by the holes (276) when used in combination with Sakai. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Sakai as modified, with the apparatus of Sayhoun in order to provide a flat spectrum of frequency vibrations.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (WO 01/41496) in view of Azima (6,522,760) and Shimakawa (5,894,263), as applied to Claim 1, and further in view of Bertagni (5,693,917). Sakai, Azima and Shimakawa are

relied upon for the reasons and disclosures set forth above. Sakai further teaches a vibration-controlling portion comprises a cushion member (Figure 3B, #6b) supporting two opposite sides of the diaphragm (9). Sakai, Azima and Shimakawa fail to teach wherein a stepped portion formed in the portion of the base supporting the other side of the cushion member, and the elastic force of the cushion member supporting the diaphragm is partly varied by the stepped portion. Bertagni teaches a stepped portion (Figure 5, #78) formed in a portion of a base (74) supporting the other side of a cushion member when used in combination with Sakai, and the elastic force of the cushion member supporting the diaphragm is partly varied by the stepped portion (78), when used in combination with Sakai. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Sakai as modified, with the apparatus of Bertagni to better secure the apparatus together.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent arts of record relating to electro-acoustic transducers are disclosed in the PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Luks whose telephone number is (571) 272-2707. The examiner can normally be reached on Monday-Thursday 8:30-6:00, and alternating Fridays.

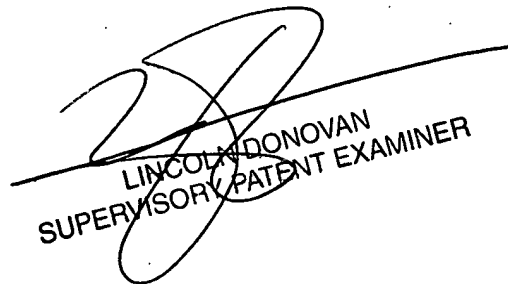
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone

Art Unit: 2837

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremy Luks  
Patent Examiner  
Art Unit 2837  
Class 181

  
LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER